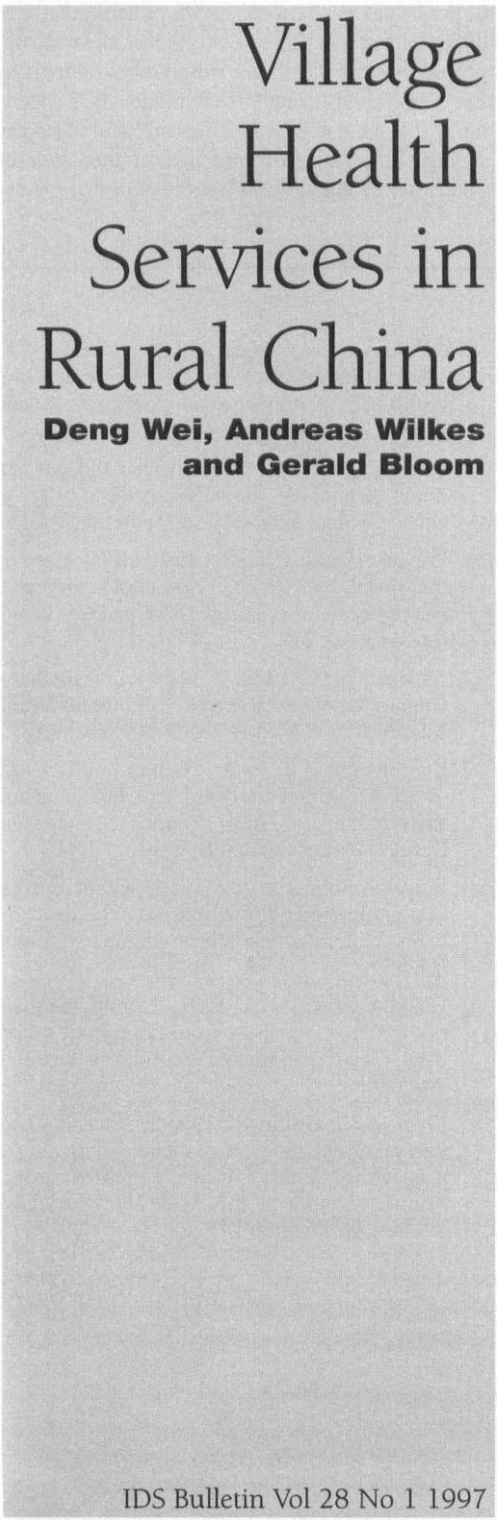

1 Introduction

Since the beginning of the barefoot doctor programme in the late 1960s, China has been regarded as a model of how to provide basic curative and preventive services to a poor rural population at low cost. The barefoot doctors' successors are now the major providers of basic health services to the rural population. They are expected to perform a wide range of functions, including provision of simple curative and preventive services, referral of patients, collection and reporting of health information, monitoring of water and environmental health, and health promotion/education (Hillier and Xiang 1991; De Geyndt *et al.* 1992).

As with community health worker programmes in other countries, the actual performance of these functions is often quite different from the statements of intentions (Walt 1990). The success of such programmes depends on a number of factors including: the provision of appropriate and adequate training, definition of roles, motivation and remuneration of health workers, and supervision and support.

This article reports the findings of a questionnaire survey of 43 health workers and a survey of health stations in 27 villages in three relatively poor counties in China. This is a small sample, but the findings provide an insight into some of the major characteristics of village health services. The survey found big differences between health services in Xunyi and in the other two counties. A higher proportion of Xunyi's population sees a health worker when they are unwell and its preventive programmes provide much better coverage (Li *et al.* 1997; Shu *et al.* 1997). This article tries to explain these differences and concludes by discussing the issues that policy makers have to address with regard to village health services in poor rural areas.

2 Village Health Workers' Roles and Training Backgrounds

In the 1960s and 1970s, village collectives sent local people for periods of between one and three months for training as barefoot doctors. Barefoot doctors were part-time health workers, providing preventive and basic curative services, and part-time farmers. Since then, the Ministry of Public Health (MoPH) has taken several measures to

Table 1 **Staffing of village health stations**

	Donglan	Shibing	Xunyi
Av. no. rural doctors per VHS	1.6	1.0	1.8
Av. no. health aides per VHS	0.4	0.1	0.5
Av. no. birth attendants per VHS	0.1	0.9	0.6

improve the quality of barefoot doctors. It increased the recommended length of training for village health workers to 12 months in the mid-1980s. It also issued a regulation allowing barefoot doctors to be certified as 'rural doctors' if they passed an examination. Otherwise, they were to be reclassified as 'health aides'.

There were more rural doctors per health station in Xunyi than elsewhere, and there were also more health aides (see Table 1). Almost three-quarters of the village health workers interviewed in the three counties were licensed rural doctors. Eight of the 10 health stations in Donglan were solo practices run by a rural doctor. Two also had one or more health aides. However, in Donglan and Shibing, the roles of rural doctors and health aides are not clearly differentiated. Some licensed rural doctors have had very little or no training. Health aides may also provide the full range of services, and in two villages in Shibing health aides practised as solo practitioners.

Most of the village health workers from Donglan and Shibing were 40 or more years old and had begun work as barefoot doctors before or during the Cultural Revolution. None of the health workers were in their 30s and only a few were in their 20s. This suggests that a large proportion of both counties' village health workers will need to be replaced in the next 20 years. There was a more even age distribution of village health workers in Xunyi.

The village health workers surveyed had an average of eight months of training. Xunyi's rural doctors have had more training than those in Donglan and Shibing. This is true of both recent recruits to the health sector and those originally trained as barefoot doctors. A number of the health aides in Xunyi have received specialised training to provide maternal and child health (MCH) services. In Shibing one third of the health workers had no formal training at all. Of the village health workers with more than 10 years experience, half in Donglan and one fifth in Shibing had not received more than six months training. Some had not received any training at all. This suggests that the attempts by the MoPH to upgrade village health workers had little impact in these counties. This is consistent with Kan's (1990) finding that health workers find it difficult to attend upgrading courses.

3 Provision of Village Health Services

All health stations surveyed provided curative care. However, they did not all provide a full package of preventive services. For example, in Donglan and Shibing only a few offered ante- and postnatal visits. All health stations in Donglan and Shibing provided immunisations in 1993, although this was not the case in other years (Shu *et al.* 1997). Almost all health stations in Xunyi provided both types of preventive service.

Many health stations in Donglan and Shibing are poorly equipped. None of Donglan's health stations had a package for safe delivery or scales for weighing babies, and a quarter of them did not have a means of sterilising instruments. Less than half the facilities in Shibing had a means of sterilisation, and although just over half had packages for safe delivery, none had weighing scales. Several health stations did not have a blood pressure cuff or a stethescope. Health stations in Xunyi were better supplied with all types of equipment.

All of the health stations surveyed stocked a large variety of Western and Chinese drugs. Facilities in

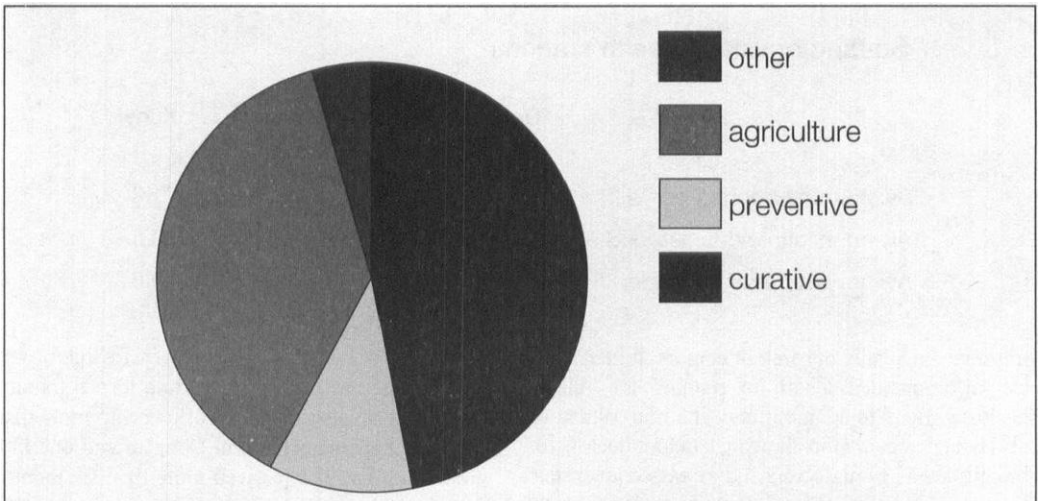

Figure 1 **Allocation of time by village health workers in Donglan and Shibing**

Donglan and Shibing had an average of 90 products and those in Xunyi had over 300. Not all of the drugs were appropriate given health workers' limited training. The survey did not collect information on the drugs that were stocked. However, one of the authors found corticosteriods, a wide variety of antibiotics including gentamycin and streptomycin, and injectable iron and vitamin supplements in Xunyi. A very small sample of prescriptions provided evidence of overuse of antibiotics and injectable products (Gu *et al.* 1993).

4 Allocation of Time by Village Health Workers

When collectively owned land was distributed in the early 1980s, the families of village health workers received a share in the same way as other villagers. Most village health personnel are part-time health workers and part-time farmers. Health work is a source of supplementary income much like any other non-farm activity. Indeed, this was the attraction of the 'barefoot doctor' model, which made it possible for villages to retain a health worker at an affordable cost. The average gross income of the health workers surveyed ranged between ¥1,850 in Donglan and ¥2,175 in Xunyi, or between two and three times higher than the average per capita gross incomes of villagers in the three study counties.[1]

Health workers in Donglan and Shibing spent more than half their time in health work and just over two-fifths of their time in agriculture and other activities. Engagement in the health sector for rural doctors and health aides in Donglan and Shibing largely implies the provision of curative services and the sale of drugs. Four-fifths of the time they spent on health work was allocated to curative care and one fifth to prevention (Figure 1). One explanation put forward for the neglect of preventive programmes is the low remuneration. Health workers in Donglan and Shibing derived almost four times as much income from the provision of curative services compared to their earnings from preventive work (Figure 2). Drug prices included a mark-up of 10-15 per cent for Western and Chinese drugs, and slightly less for herbs. This links health workers' incomes to the sale of drugs.

A different model of rural doctors' and health aides' roles operates in Xunyi. Health stations in Xunyi derive over 90 per cent of their revenue from the sale of drugs, but while rural doctors concentrate on curative care, health aides allocate more of their

[1] In the estimation of health worker income, household agricultural income per capita was used as a proxy for agricultural income. Information on household size and composition, and hiring of farm labour was not collected. Total health worker incomes estimated using this method should be higher than the average for villagers engaged mostly in agriculture.

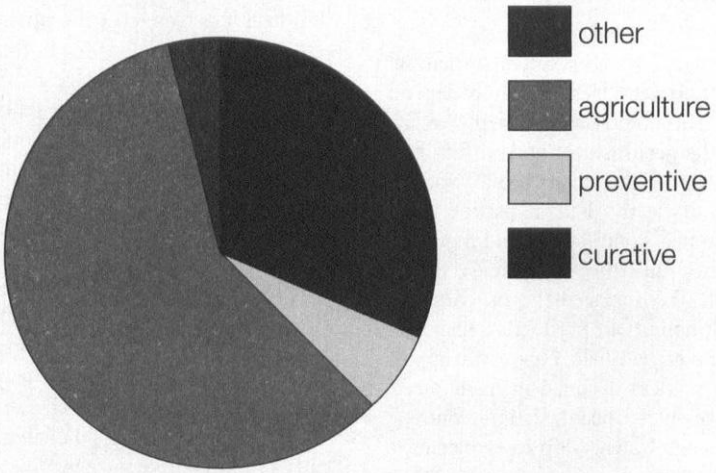

Figure 2 **Sources of income for village health workers in Donglan and Shibing**

health-related work time to prevention (Table 2). The allocation of time by the two categories of health workers is broadly reflected in their sources of income. Health aides earned almost one fifth of their income from payments for preventive work, compared to less than four per cent for rural doctors (Table 3). Those who provide MCH services receive a small payment from the village committee, and all health workers who provide immunisations receive payments through a pre-paid insurance system in which parents pay a fee for a series of immunisations (see Shu *et al.* 1997).

Table 2 **Time allocation by village health workers in Xunyi (%)**

Activity	Rural Doctors	Health Aides
Curative	47	16
Preventive	10	27
Agriculture	35	51
Other	8	6

Table 3 **Sources of income for village health workers in Xunyi (%)**

Source of income	Rural Doctors	Health Aides
Salary	2	8
Curative fees	41	16
Preventive fees	4	19
Agriculture	49	53
Other	4	4

5 Organisation of Village Health Services

Village health workers do not operate in a vacuum. The fulfilment of their roles does not simply depend on their characteristics, but also on how they relate to others within the health sector and within their communities. In the 1970s, village health workers were responsible to clearly defined parties: commune health personnel, communities and their representative agents in the brigade (village) committees. With the replacement of collective agriculture by the household production responsibility system in the early 1980s, collective support for village health services declined in many areas. While some 'village owned' health stations continue to exist, the meaning of ownership categories have changed.

Prior to the socioeconomic reforms, almost every village in Donglan had a collectively supported health station (Gu *et al.* 1995a). Of the 10 health facilities included in this survey, eight were privately owned. Two were jointly managed by the village committee and the doctors, but only one received a small subsidy from collective sources. None of the health workers surveyed received a salary. Donglan's village health workers are relatively autonomous in their provision of curative and preventive services, regardless of the form of ownership of the facility. Village health workers compete for patients with township health centres, and supervision of village health workers by township health centre staff is infrequent (Tang 1997). However, there are limits to their autonomy. In 1993 and 1995 the County Health Bureau organised immunisation programmes and most private doctors were paid a small sum for participation in the programme. Although this subsidy accounted for only a small proportion of their incomes, through the influence of the Health Bureau and the authority of the village committees, private doctors were mobilised to provide immunisations. In the intervening years, however, they have not immunised children on a routine basis (Shu *et al.* 1997).

In Shibing, not all collectively owned health stations (just under half the sample) received subsidies from government or collective sources. The only health station in a building allocated by the village committee was a private clinic. Apart from some limited financial support, village health workers in Shibing are not supported or supervised by township health personnel, with whom they have little contact (Bloom *et al.* 1995). In focus group discussions, members of the village committee in one village said that although they paid the rural doctor a subsidy in the hope that he would provide better and cheaper services, they were unable to monitor the types of drug sold and did not know on what basis the rural doctor charged his fees.

Xunyi is a pilot site for a UNICEF-sponsored programme to strengthen MCH services (see Shu *et al.* 1997). Programme funds have financed equipment purchases and the training of female MCH health aides. In addition to the small sum paid to the specialised MCH workers by the village committees, all village health workers receive payments for immunisations through a pre-paid immunisation insurance scheme. Part of the funds raised through this scheme are distributed to township and county levels, and because all levels are responsible for paying compensation if the relevant diseases occur among immunised children, county and township personnel have an incentive to ensure that immunisation work is carried out thoroughly at the village level (Shu *et al.* 1997). Preventive and MCH personnel from the township health centres visit the villages several times each year, and village health workers attend monthly meetings at the township level.

6 Discussion

The extent to which village health workers provide both curative and preventive services, and the quality of those services are key issues of concern. The preceding sections have argued that the differences between the services provided by village health workers in the three counties reflects a number of influences on their behaviour. This complex of influences raises a number of questions which policy makers must face in dealing with these issues.

Village health stations were formerly collectively owned and partially funded from collective sources. This form of ownership did not merely consist of a financial relationship, but was part of a complex of relationships which constrained the behaviour of village health workers and supported them in the provision of services. Collective ownership implied political and administrative control as well as political support for preventive and promotive activities.

These activities and the provision of basic curative services were undertaken within the structure of the three-tier network, which provided technical supervision and support.

Section 5 showed that ownership categories no longer imply financial support and that in the current context, political, administrative and technical control and support are often lacking. The services provided by many health workers reflect financial incentives, but other than the limited constraint imposed by market competition, their behaviour is not subject to alternative mechanisms of community control. Currently, village health workers in both Donglan and Shibing largely operate without regulatory and supervisory controls. Neither do they receive technical support to ensure the quality of services provided. The immunisation campaign in Donglan demonstrates, however, that private health workers can be responsive to a combination of financial and administrative incentives.

The roles of rural doctors and health aides in Xunyi are more clearly differentiated than in Donglan and Shibing. Rural doctors are better trained, though there is evidence of overuse of drugs. Health aides receive specialised training and financial incentives, and are supervised in the provision of preventive services. The high incomes earned from the sale of drugs may make an important contribution to the viability of health stations in Xunyi. Nevertheless, the model which operates in Xunyi shows that good access to both curative and preventive services can be provided in poor rural areas.

Financial incentives have an important influence on village health workers' behaviour. In Xunyi, the prepaid immunisation insurance scheme and the payment of subsidies to health aides give incentives to provide preventive services. One suggested policy is to employ village health workers on salary (Gu *et al.* 1995), possibly paid for out of a fee collected by the village committee or township (De Geyndt *et al.* 1992; Gu *et al.* 1997). Without the necessary support from other parties in preventive work, salaries might simply increase rural doctors' incomes without influencing the provision of services. To ensure preventive work is done regularly and adequately, village health workers should be monitored, supervised and supported by township level staff as part of a county-wide preventive service.

One problem in Donglan and Shibing is the low level of training. The MoPH is currently promoting three years' training for rural doctors. However, previous policy statements encouraging more training have had little impact in Donglan and Shibing, since village health workers and village committees have had to find their own ways of financing training. Licensing and certification measures have also not served to regulate the technical standards of health workers. In poor villages with a weak collective economy, where neither village health workers nor village committees are able to finance training, funds could be provided by local governments.

Inappropriate and excessive use of drugs and injections are common. The regulation of drug use would diminish the risk of side-effects and would control costs. Drug use at the village level could be monitored by township health centres or by local health care committees, as suggested by Gu *et al.* (1997). In either case, this could be part of a wider essential drugs policy which regulates drug use at all levels of the health care system. Such regulation would be difficult to implement. First, the relationships between producers, suppliers and providers of drugs are complex (Zhan *et al.* 1997). Second, the profits from drug sales are an important source of income for village health workers. Alternative sources of finance for village health workers would have to be found.

Large numbers of village health workers in Donglan and Shibing will eventually retire. If they are to be replaced, the preceding discussion raises the more general issue of what type of village health worker is really needed (see De Geyndt *et al.* 1992). Should new personnel focus on providing preventive services? Or should they be trained to provide better curative services as well as preventive services? This survey cautions that village health workers have come to see themselves (and be seen) as providers of curative care. Patients often ask for specific drugs by name and prefer doctors who prescribe several drugs (Zhan *et al.* 1997). It is therefore unclear whether, in the absence of continued support and supervision, specially trained preventive health aides would continue to provide mainly preventive services, or whether their activities would shift to the provision of curative services.

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